C L A I M S

1. A magnetic field sensor characterized by comprising a substrate, a stacked coil formed on said substrate, and a strip line formed on said substrate to continue to said stacked coil, wherein

said stacked coil comprises coil forming elements respectively formed of at least two conductor layers on said substrate, and contact means, formed in an interlayer dielectric film interposed between said conductor layers, for bringing said coil forming elements on and under said interlayer dielectric film into contact with each other through a via hole,

said strip line comprises a structure in which a lower grounding layer, a lower interlayer dielectric film, a strip conductor, an upper interlayer dielectric film, and an upper grounding layer are stacked on said substrate in an order named,

the number of turns of said stacked coil is larger than 1,

one end of said stacked coil continues to either one grounding layer of said lower grounding layer and said upper grounding layer, and

the other end of said stacked coil continues to said strip conductor.

2. A magnetic field sensor according to claim 1, characterized in that the number of turns of said

stacked coil is not less than the total number of said coil forming elements.

3. A magnetic field sensor according to claim 1, characterized in that an outline shape of said stacked coil when seen from the top is rectangular.

4. A magnetic field sensor according to claim 1, characterized in that the total number of said coil forming elements is one of 2 and 3.

5. A magnetic field sensor according to claim 4, characterized in that of said coil forming elements, with reference to said substrate, one of said coil forming element which corresponds to a lowermost layer and said coil forming element which corresponds to an uppermost layer continues to said one grounding layer, and the remaining one continues to said strip conductor.

6. A magnetic field sensor according to claim 4, characterized in that

said one grounding layer and said coil forming element which continues thereto are formed of one conductor layer, and

said strip conductor and said coil forming element which continues thereto are formed of another conductor layer.

7. A magnetic field sensor according to claim 1, characterized in that the total number of said coil forming elements is 4.

8. A magnetic field sensor according to claim 7,

characterized in that

of said coil forming elements, with reference to said substrate, one of said coil forming element which corresponds to a lowermost layer and said coil forming element which corresponds to an uppermost layer continues to said one grounding layer,

extending means which continues to said strip conductor is formed close to one of said three remaining coil forming elements which is located at the middle, and

the remaining one of said coil forming element which corresponds to said lowermost layer and said coil forming element which corresponds to said uppermost layer is in contact with said extending means through a via hole.

9. A magnetic field sensor according to claim 1, characterized in that each of said lower grounding layer and said upper grounding layer comprises a T-shaped planar shape in which a line width at an end on a stacked coil side is larger than a line width at another region to form a rectangular region.

10. A magnetic field sensor according to claim 9, characterized in that said strip conductor extends through a middle point of a long side on a proximal portion side of said rectangular region and a central point of said rectangular region, switches a direction thereof by 90° at the central point to extend along a

central line which extends through a middle point of a short side of said rectangular region, switches a direction thereof again by 90° toward said stacked coil before reaching said short side, and reaches a long side on a stacked coil side of said rectangular region.

11. A magnetic field sensor according to claim 9, characterized in that a length of a short side of said rectangular region is 4 to 8 times a line width of said strip conductor.

12. A magnetic field sensor according to claim 11, characterized in that a gap between an end of said strip conductor on said stacked coil side and a short side among short sides of said rectangular region which is the closest to said end is not less than twice the line width of said strip conductor.

13. A magnetic field sensor according to claim 1, characterized in that each of said lower grounding layer and said upper grounding layer comprises a band-like planar shape.

14. A magnetic field sensor according to claim 1, characterized in that a thickness of said upper interlayer dielectric film on said strip conductor is substantially equal to that of said lower interlayer dielectric film under said strip conductor.

15. A magnetic field sensor according to claim 1, characterized in that said strip line comprises a shield type strip line region with an outer surface which is

formed of said lower grounding layer and said upper grounding layer.

16. A magnetic field sensor according to claim 1, characterized in that a characteristic impedance of said strip line is equal to that of a high-frequency cable which connects to one end of said strip line.

17. A magnetic field sensor according to claim 1, characterized in that a characteristic impedance of said strip line is equal to that of a transmission line that relays said strip line to a high-frequency cable.

18. A magnetic field sensor according to claim 1, characterized in that all said coil forming elements are wound in one direction.